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The following discussion is a highly generalized answer to the question of what new projects can NPIC now foresee for the period FY-1972-FY-1975. It is not practical to attempt to define many individual projects during this time frame--there are just too many variables involved. However, it is quite practical to discuss the funding during this era in terms of technical categories and thus provide a rational overall view of the future R&D program. This approach is, of course, somewhat more time-consuming and more demanding but should prove more satisfactory. As a consequence, we are forwarding this generalized answer but it will be followed within a few days by narratives arranged by technical categories and displayed in tabular form with appropriate funding.

Research and development at NPIC is currently at a transition point. This comes about primarily as a result of two factors. (1) We have just moved through a period in which the Center was directed to seek short-term quick pay-off solutions to existing problems. This combined with two successive highly restricted budgets has resulted in considerable curtailment of the impetus of the research and development at the Center. (2) The Center has reached a technological transition point. In the past, we have run mainly an equipment and project-oriented R&D program. This was practical because there were large numbers of technological gaps requiring extensive work. An example would be in the area of viewing equipment--microstereoscopes and light tables. Much could be done in this area because so much needed to be done. A series of successful developments in this area have now considerably closed that gap. The same situation is true in many other areas of technical interest. It is now necessary to think more

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in terms of systems than individual projects, and this requires a much broader technological base. During FY 70 and 71, we are in the process of laying that foundation--establishing that base. As a consequence, it is difficult at this time to project individual projects in the FY-72 to FY-75 time frame. Also specific equipment development is predicted on operational requirements which are difficult to prognosticate in the FY 72 to FY 75 period. However, certain specific areas of endeavor can be isolated. Because of the Center's future space and personnel limitations, it is predictable that a high degree of automation will have to take place; i.e., there will be greater reliance on computers. If technology is to expand in this area, we will have to develop better devices for putting a continuous tone image into digital form for subsequent manipulation by the computer. And we will have to develop better devices for getting the image back in a visually recorded format after manipulation by the computer. Computer assistance in the interpretation process, image classification, image counting, and automatic change detection will be investigated. Computer assisted training and computer assisted diagnosis will be researched. Digitizing of the image requires a better fundamental understanding of the nature of the image itself. Image analysis will have to continue. If we think of the Center as a system, then it is certainly a human limited system; and as a consequence, if we are to improve the efficiency of that human limited system, studies in the area of imagery interpretation research will have to continue. Realtime, of course, will provide its own impacts, which are very difficult to foresee at this time, because so little is known of the system or the nature of the Center's involvement. Automation of the viewing process, pre-program scan, audio-stereo correlation, and automatic edge sensing in mensuration devices will come under extensive investigation during this period. Exotic reproduction materials, techniques and equipment will be perfected and brought into operational use. Multi-spectral

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imagery will come under more scrutiny and read-out equipment will be developed, if the intelligence worth can be proven through prior investigations. Until the aforementioned technological base has been established, more specific projects and programs cannot be defined with any degree of certainty.

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